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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/754,865	01/04/2001	Nicholas P. Wilt	MS1-661US	3979

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EXAMINER
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PATEL, KANJIBHAI B

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 11/04/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/754,865

Applicant(s)

WILT, NICHOLAS P.

Examiner

Kanji Patel

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show reference **200 in figure 1** as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings are objected to because of the following informalities:

**Change “402” to —400—**in figure 3 as described on page 9, line 12 of the specification. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-116 are rejected under 35 U.S.C. 102(b) as being anticipated by Hsiang-Ling et al. (hereinafter Hsiang-Ling) (Hardware design of a 2-D motion Estimation System based on the Hough Transform --- IEEE 1998).

**For claim 1**, Hsiang-Ling discloses method comprising:

providing image data (at least in abstract and introduction page 80, Hsiang-Ling operates on 256x256 image data);

performing a Hough transform on the image data (abstract; also sections II, III, IV provide detailed explanation of the application of Hough Transform in feature detection), using a host processor (at least figures 4-5) and operatively configured graphics processor (at least in the abstract and section 1 Hsiang-Ling explains the use of Mentor Graphics tools in performing the motion estimation based on the Hough transform. Mentor Graphics tools inherently provide a graphics processor.

**For claim 2**, Hsiang-Ling discloses the method wherein the graphics processor is configured to count votes in a resulting Hough transform voting buffer (at least subsection D in section V provides vote accumulator and vote memory as shown in figures 23 and 24).

**For claim 3**, Hsiang-Ling discloses the method wherein the graphics processor is configured to convolve image values and provide corresponding results to the host processor (at least section III provides the distribution of pixels in a 3x3 window centered around the current edge pixel and convolution is provided using 40 states).

**For claim 4**, Hsiang-Ling discloses the method wherein the graphics processor performs an alpha-blending operation that selectively increments accumulators that

correspond to parameter combinations that are likely associated with an observation (section V).

**For claim 5**, Hsiang-Ling discloses the method wherein the graphics processor performs a histogram computation to find the maxima value in the Hough transform voting buffer (section V).

**For claim 6**, see the rejection of claim 1 above.

**For claim 7**, see the rejection of claim 2 above.

**For claim 8**, see the rejection of claim 3 above.

**For claim 9**, see the rejection of claim 4 above.

**For claim 10**, see the rejection of claim 5 above.

**For claim 11**, see the rejection of claim 1 above.

**For claim 12**, see the rejection of claim 2 above.

**For claim 13**, see the rejection of claim 3 above.

**For claim 14**, see the rejection of claim 4 above.

**For claim 15**, see the rejection of claim 5 above.

**For claim 16**, Hsiang-Ling discloses the method comprising:

causing dedicated graphics hardware to support for quantizing a bounded portion of a parameter space that may contain a desired feature associated with a Hough transform algorithm (Hsiang-Ling describes at least in section II regarding the quantization of the bounded parametric space).

**Other prior art cited**

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Saeki (US 5,430,810) discloses a real time implementation of the Hough transform.

Deering et al. (US 6,496,187 B1) discloses a graphics system configured to perform parallel sample to pixel calculation.

Matsunaga (US 6,111,993) discloses a straight line detecting method.

Rowland et al. (US 5,801,970) discloses a model-based feature tracking system.

Saito et al. (US 5,960,371) discloses a method of determining dips and azimuths of fractures from borehole images.

Saitoh (US 5,220,621) discloses a character recognition system using the generalized Hough transformation and method.

Otsuka et al. (US 6,263,089 B1) discloses a method and equipment for extracting image features from image sequence.

**Contact information**

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Kanji Patel** whose telephone number is (703) 305-4011.

The examiner can normally be reached on Monday through Friday from 8:00 a.m. to 6:30 p.m. Friday off.

If attempts to reach the examiner by phone are unsuccessful, the examiner's supervisor, **Mehta, Bhavesh**, can be reached on (703) 308-5246.

Any inquiry of general nature or relating to the status of this application should be directed to the **Group receptionist** whose telephone number is (703) 305-3800.

The **Fax number** for this group is (703) 306-9306.



Kanji Patel  
Patent Examiner  
Group Art Unit 2625  
October 31, 2003